WM-A52/B52

SERVICE MANUAL

Photo: WM-A52

US Model
Canadian Model
WM-A52
AEP Model
UK Model
E Model
WM-B52

SPECIFICATIONS

Frequency response	40 — 14,000 Hz (with metal tapes or CrO_2 tapes) 40 — 14,000 Hz (with normal tapes)
Power output	15 mW + 15 mW at DC operation (at 10% harmonic distortion), Impedance 32 ohms
Power requirements	3 V DC, two size AA (R6) batteries
Battery life	

Batteries	Playback
Sony battery SUM-3 (NS)	Approx. 4 hours
Sony alkaline battery AM3 (N)	Approx. 8 hours

For maximum performance, we recommend the use of alkaline batteries.

Dimensions	Approx. 99 x 138 x 40 mm (w/h/d) (4 x 5 1/2 x 1 5/8 inches) excl. projecting parts and controls
Weight	Approx. 320 g (11.3 oz) incl. batteries excl. other accessories
Accessories supplied	Stereo headphones (open-air type 1)

Clock section

Digits	6
Functions	6 (Hour, minute, second. day/month, date, day)
Stopwatch	1/100 second display (up to 40 minutes) 1 second (up to 24 hours)
Calender	Auto calender (based on February 28)
Timekeeping accuracy	±30 seconds/month (+5°C to +35°C)
Power supply	Solar battery/auxiliary battery, automatic switching type
Battery life	Approx. 4 years (when exposed to at least 200 lx for at least 8 hours per day)

Optional accessories

Battery charger BC-700
Rechanrgeable battery BP-700

Model Name Using Similar Mechanism	WM-AF58/BF58
Tape Transport Mechanism Type	MF-WMAF58

MICROFILM

CASSETTE PLAYER

SONY®

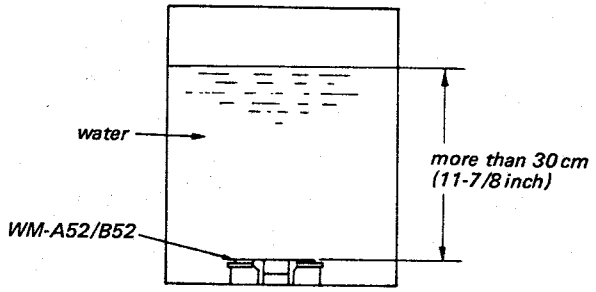
NOTE ON REPAIR

This model is waterproof, so be sure to confirm waterproofing after reapir.

WATERPROOF CHECK

(1) Insert batteries or a cassette tape in the set. (So that it will sink.)

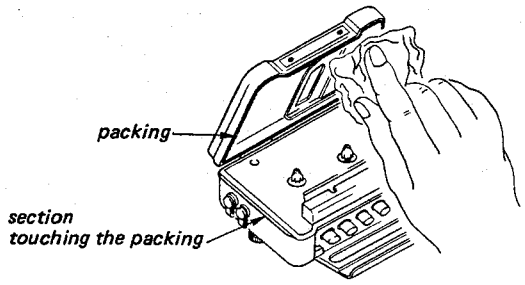
(2) Place in more than 30 cm of water for 30 minutes. (Close DC jack and packing firmly.)



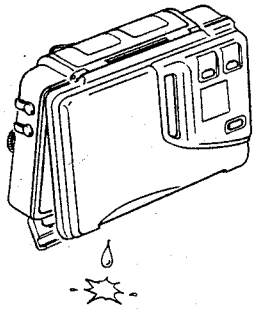
(3) Remove from the water after 30 minutes and wipe off all moisture.

(4) Check all operations. (If water has entered, abnormal operation will occur.)

(5) Open the cassette case and wipe off all moisture on the packing and case sections touching the packing.



(6) Shake the set and confirm that no water comes out.



(7) When waterproofing is confirmed, mount the ornamental sheet and ornamental plate assy (A). (Wipe off the water on the screw to prevent rusting.)

IF LEAKAGE OCCURS DURING WATERPROOF CHECK:

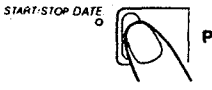
Dry the mechanism section and amp board, jack, etc. with a hairdryer, perform waterproofing procedures again and recheck starting with step (1).

How to Use the Clock

To Set the Time and Date

Keep pressing for 1–2 seconds. Then press again.

Select the flickering digits you want to adjust.

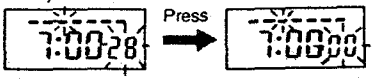


With each press, they move orderly from seconds to date.

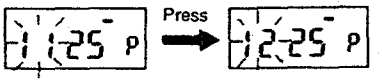
Adjust the digits.

Example

To adjust the seconds



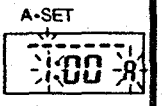
To adjust the month



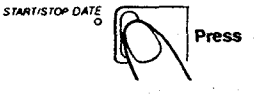
When adjusting the digits except seconds, they change by one with each press.
To advance the digits rapidly, keep ALARM/ RESET button pressed.

To Set the Alarm Time

Keep pressing for 1–2 seconds.



Select the flickering digits you want to adjust.



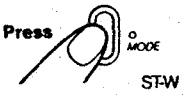
With each press, minutes and hours are selected alternately.

Adjust the digits.

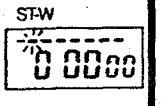
To advance the digits rapidly, keep ALARM/ RESET button pressed.

After adjusting the clock time or the alarm time, press MODE button to return to normal display.

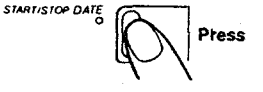
To Use the Stopwatch



Press once.



To start



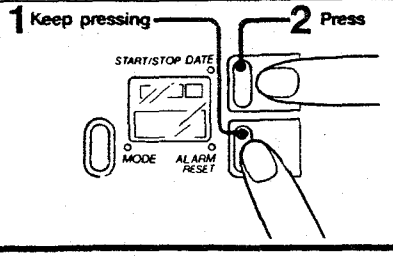
To stop, press again.

To see the lap time while stopwatch is running.
To reset to zero after stopping the stopwatch.

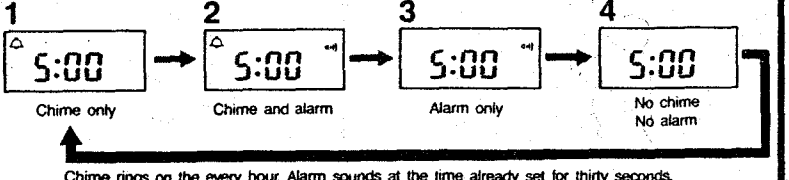
To return to the stopwatch, press again.
(Stopwatch continues to run while lap time is shown.)

To return to normal display from the stopwatch, press MODE button.

To turn the alarm and the chime on and off



With each press of DATE button, display changes as follows.

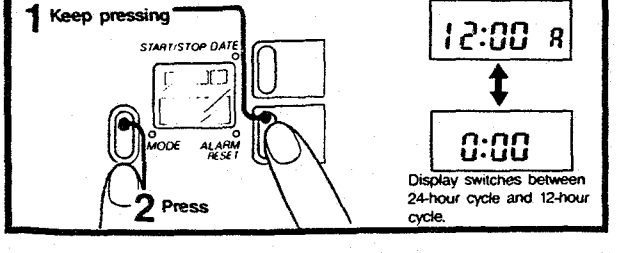


Chime rings on the every hour. Alarm sounds at the time already set for thirty seconds.

To turn off the alarm when it beeps, press ALARM/RESET button.

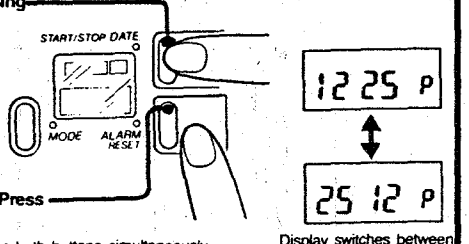
To confirm the date, press DATE button while normal display.
To confirm the alarm time, press ALARM/RESET button while normal display.

To Switch Time Display Cycle



Display switches between 24-hour cycle and 12-hour cycle.

To Switch Month and Date Location



Note: If you press both buttons simultaneously, all the digits are displayed while the buttons are pressed.

Display switches between date/month and month/date.

SECTION 1
ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denaturedalcohol-moistened swab:

playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

1-1. MECHANICAL ADJUSTMENTS

TORQUE MEASUREMENT

Mode	Torque meter	Meter reading
FWD	CQ-102C	30 – 60 g·cm (0.41 – 0.83 oz·inch)
FWD Back Tension		0.5 – 4.5 g·cm (0.007–0.06 oz·inch)
FF, REW	CQ-201B	more than 55 g·cm (0.76 oz·inch)

TAPE TENSION MEASUREMENT

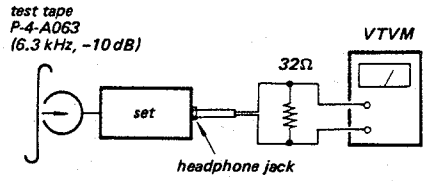
Mode	Tension meter	Meter reading
FWD	CQ-403A	more than 90 g (3.17 oz)

1-2. ELECTRICAL ADJUSTMENTS

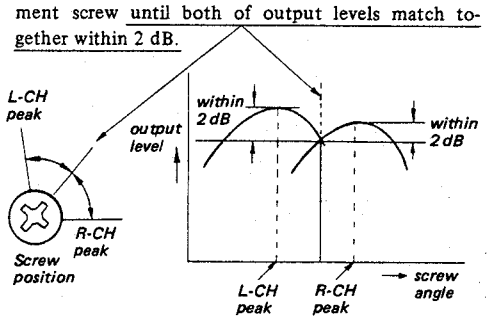
PB Head Azimuth Adjustment

Procedure:

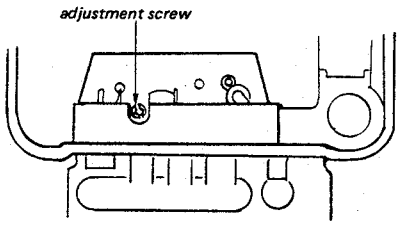
1. Mode: playback



2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 2 dB.



Adjustment Location:



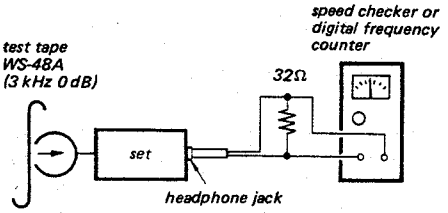
Tape Speed Adjustment

Setting:

VOL control: mechanical mid

Procedure:

Mode: playback

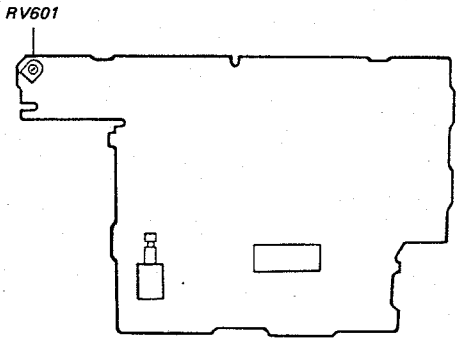


- Play back the end of the tape in FWD mode and adjust RV601 for the specification.
- The specification should be satisfied in any condition of tape top, tape end, high and low voltage, vertical and horizontal stand.

Specification:

Speed checker	Digital frequency counter
±3%	2,910 – 3,090 Hz

Adjustment Location: main board

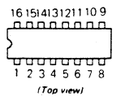


SECTION 2
DIAGRAMS

2-1. PRINTED WIRING BOARDS
– AUDIO SECTION –

- **Semiconductor Lead Layouts**

LA4570



TLR223

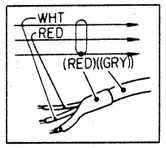
LA5523

- **Semiconductor Location**

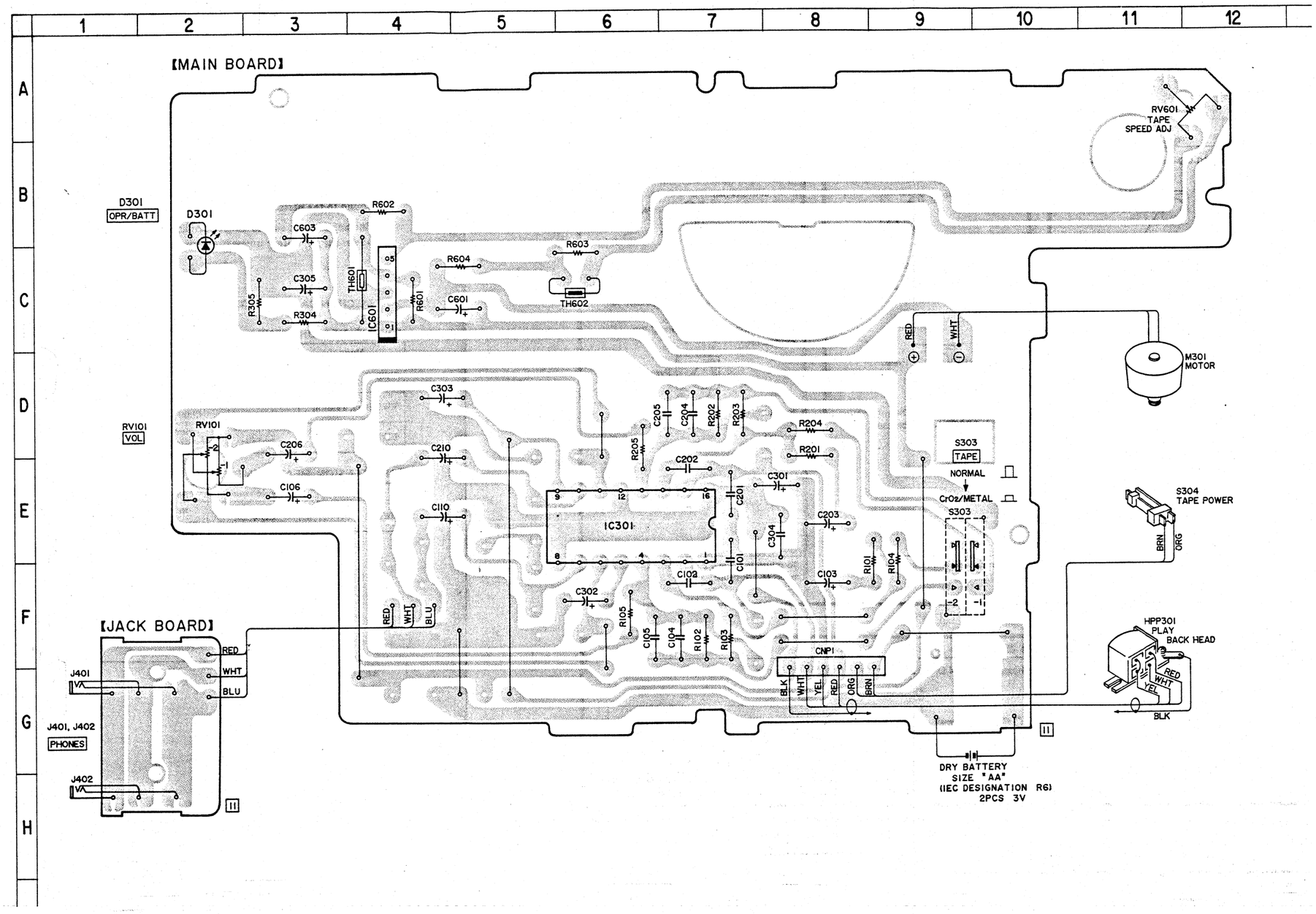
Ref. No.	Location
D301	B-2
IC301	E-6
IC601	C-4

Note:

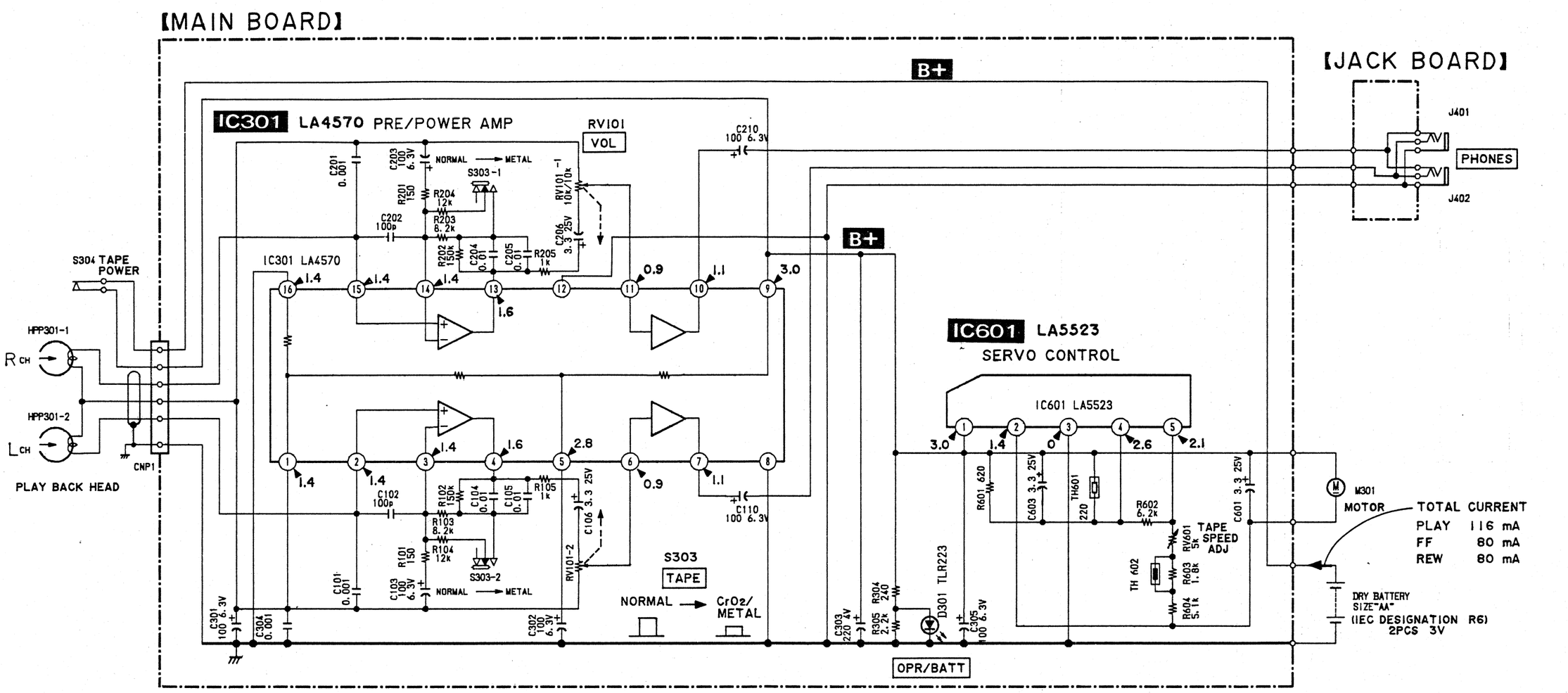
- Color code of sleeving over the end of the jacket.



- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.



2-2. SCHEMATIC DIAGRAM

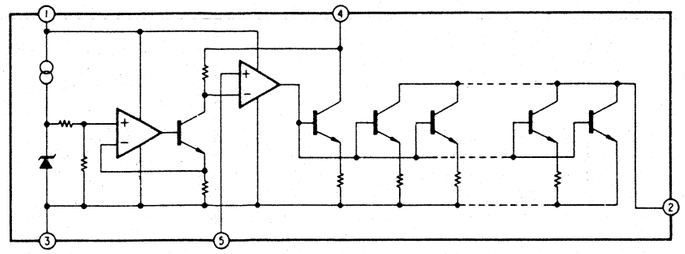


Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- Total current is measured with no cassette installed.
- Power voltages is dc 3V and fed with regurated dc power supply from battery terminal.
- Voltage and waveforms are dc with respect to ground in playback mode.
  no mark: PLAY BACK
- Voltages are taken with a VOM (50 kΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Switches

Ref. No.	Switch	Position
S303	TAPE	NORMAL
S304	POWER	OFF

- **LA5523**

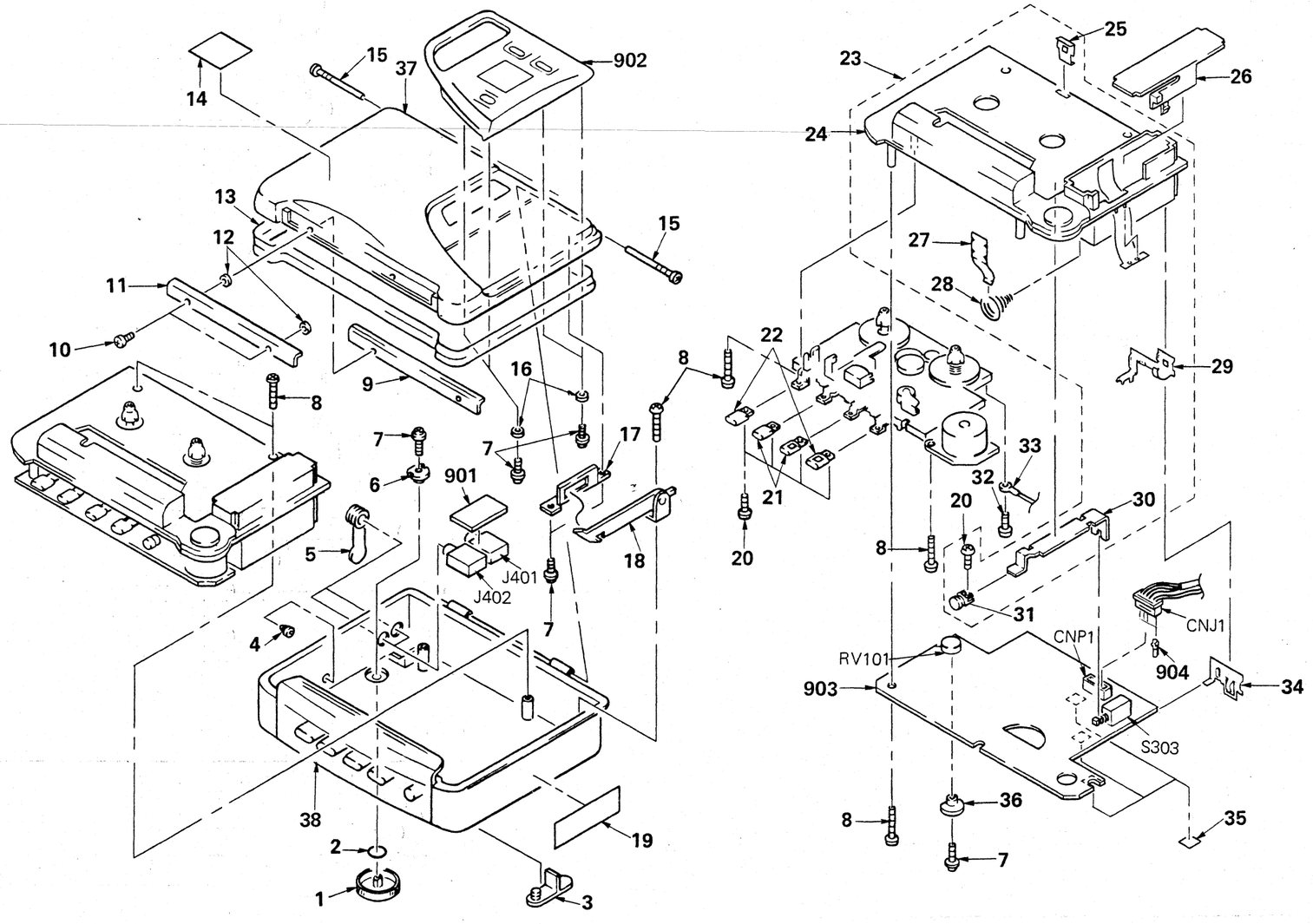


SECTION 3
EXPLODED VIEWS AND PARTS LIST

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) ...KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts' Color

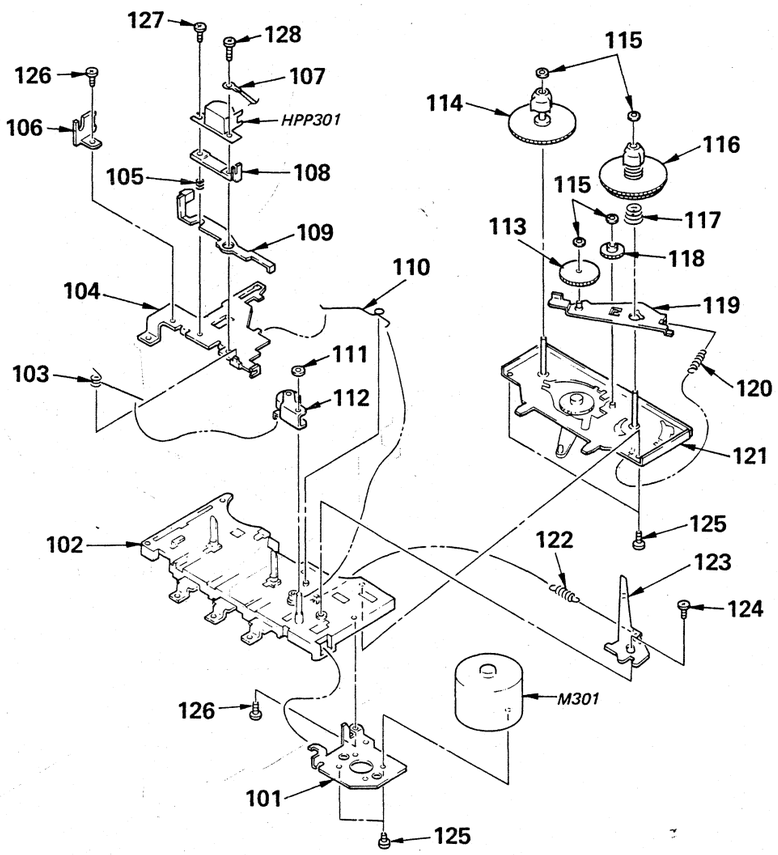
3-1. GENERAL SECTION



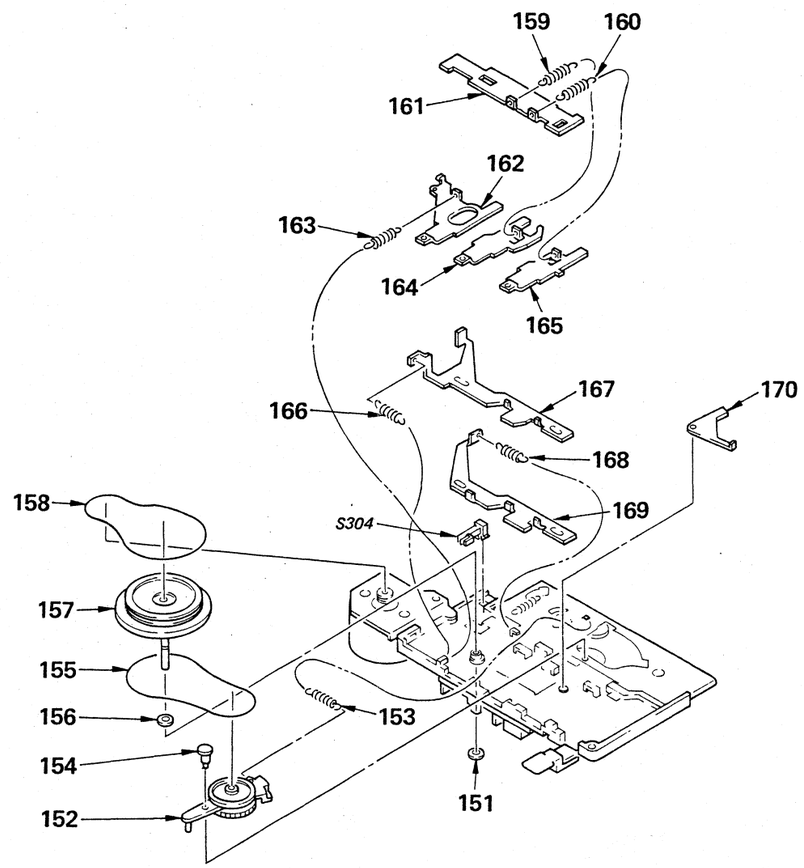
No.	Part No.	Description	Remarks
1	3-342-977-01	KNOB	
2	3-326-573-01	RING (DIA.4.9X DIA.7.1), O	
3	3-312-826-00	PACKING, TAPE SPEED ADJ	
4	*3-326-519-01	WINDOW, LED	
5	3-326-520-01	PACKING, HP JACK	
6	3-334-018-01	JOINTER (A)	
7	3-318-201-21	SCREW (B) (1.4X5), TAPPING	
8	7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT	
9	*3-342-996-01	REINFORCEMENT (B)	
10	3-326-145-11	SCREW (M1.7X5.8)	
11	*3-342-984-01	REINFORCEMENT (A)	
12	3-326-149-01	PACKING (B)	
13	3-345-601-01	PACKING, CABINET	
14	3-703-710-01	STICKER, SONY SYMBOL (12)	
15	3-326-536-11	SCREW, TAPPING	
16	3-310-368-00	RING, RETAINING	
17	*3-342-971-01	HOLDER (CLICK ARM)	
18	X-3335-662-1	ARM ASSY, CLICK	
19	3-345-634-01	(B52:E).....LABEL, MODEL NUMBER	
	3-345-635-01	(B52:UK)....LABEL, MODEL NUMBER	
20	3-318-204-01	SCREW (M1.7X2.5), TAPPING	
21	3-342-982-01	BUTTON (B)	
22	3-342-980-01	BUTTON (A)	
23	*A-3035-239-A	CHASSIS ASSY	
24	*3-345-637-01	CHASSIS	

No.	Part No.	Description	Remarks
25	3-326-112-01	SPRING	
26	3-342-987-01	LID, BATTERY CASE	
27	3-342-999-01	TERMINAL BOARD (C), BATTERY	
28	3-345-647-01	SPRING (D)	
29	3-342-997-01	TERMINAL BOARD (A), BATTERY	
30	*3-342-981-01	LEVER (TAPE SELECT)	
31	*3-342-985-01	BUTTON (TAPE SELECTION)	
32	7-627-553-27	SCREW, PRECISION +P 2X2.5	
33	7-623-505-01	LUG, 2	
34	3-342-998-01	TERMINAL BOARD (B), BATTERY	
35	3-831-441-XX	SPACER, KNOB	
36	3-334-019-01	JOINTER (B)	
37	X-3335-666-1	(A52).....CABINET (FRONT) ASSY	
	X-3335-668-1	(B52:AEP)....CABINET (FRONT) ASSY	
	X-3335-670-1	(B52:E,UK)...CABINET (FRONT) ASSY	
38	X-3335-665-1	(A52).....CABINET (REAR) ASSY	
	X-3335-667-1	(B52:AEP)....CABINET (REAR) ASSY	
	X-3335-669-1	(B52:E,UK)...CABINET (REAR) ASSY	
901	*1-625-859-11	PC BOARD, JACK	
902	1-548-153-11	CLOCK (LCD)	
903	*A-3070-231-A	MOUNTED PCB, MAIN	
904	1-565-294-11	TERMINAL, SOLDERLESS	
CNJ1	1-563-474-11	HOUSING, CONNECTOR 6P	
J401	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5)	
J402	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5)	
RV101	1-230-593-11	RES, VAR, CARBON 10K/10K (VOL)	
S303	1-571-406-11	SWITCH, PUSH (TAPE SELECT)	

3-2. TAPE MECHANISM SECTION-1
(MF-WMAF58)



3-3. TAPE MECHANISM SECTION-2
(MF-WMAF58)



No.	Part No.	Description	Remarks
101	*3-345-606-01	BRACKET, MOTOR	
102	3-596-953-01	CHASSIS ASSY	
103	3-596-957-01	SP, PINCH ROLLER	
104	*3-596-954-01	PANEL, HEAD	
105	3-596-907-01	SPRING	
106	3-596-904-01	GUIDE, TAPE	
107	7-623-505-01	LUG, 2	
108	3-596-965-01	BASE, H	
109	*3-596-955-01	PLATE ASSY, DETECTION	
110	3-596-903-01	SPRING	
111	3-596-962-01	WASHER (P.W 1.6X3.8X0.3)	
112	3-596-913-01	ARM ASSY, PINCH ROLLER	
113	3-596-940-01	GEAR, T ROLLER	
114	3-596-935-01	REEL ASSY, SUPPLY	
115	3-596-937-01	WASHER (1.2X3X0.25)	
116	3-596-934-01	REEL ASSY, TAKE-UP	
117	3-596-936-01	SPRING	
118	3-596-941-01	GEAR, FF	
119	3-596-938-01	RIVETING, TG PLATE	
120	3-596-939-01	SPRING	
121	3-596-933-01	RIVETING, REEL PC BOARD	
122	3-596-914-01	SPRING	
123	*3-596-951-01	LEVER, AUTO	
124	3-596-952-01	SCREW, AL	
125	7-627-554-07	SCREW, PRECISION +P 2X2.2	
126	7-627-554-18	+P 2X3.5	
127	3-596-967-01	SCREW (2X4.3), AZIMUTH	
128	3-596-967-01	SCREW (PLUS MINUS P 2X4.3)	
HPP301	1-543-515-11	HEAD, PLAYBACK	
M301	X-3335-664-1	PULLEY ASSY, MOTOR	

No.	Part No.	Description	Remarks
151	3-596-932-01	WASHER (1.55X3.8X0.5)	
152	3-596-943-01	PULLEY ASSY, RF	
153	3-596-944-01	SPRING	
154	3-596-945-01	SCREW, ARM COLLAR	
155	3-596-931-01	BELT, RF	
156	3-701-437-11	WASHER	
157	3-596-959-01	FLYWHEEL ASSY	
158	3-345-640-01	BELT, MAIN	
159	3-596-923-01	SPRING	
160	3-596-925-01	SPRING	
161	3-596-926-01	RETAINER	
162	*3-596-963-01	LEVER, STOP BUTTON	
163	3-596-920-01	SPRING	
164	3-596-922-01	LEVER, FF BUTTON	
165	3-596-924-01	LEVER, RWD BUTTON	
166	3-596-927-01	SPRING	
167	3-596-918-01	PLATE, FUNCTION, SW	
168	3-596-917-01	SPRING	
169	3-596-916-01	PLATE, FUNCTION	
170	3-596-915-01	LEVER, RWD	
S304	3-596-958-01	LEAF, SW	

SECTION 4
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

Ref.No.	Part No.	Description			
901	*1-625-859-11	PC BOARD, JACK			
902	1-548-153-11	CLOCK (LCD)			
903	*A-3070-231-A	MOUNTED PCB, MAIN			
904	1-565-294-11	TERMINAL, SOLDERLESS			
C101	1-162-294-31	CERAMIC	0.001MF	10%	50V
C102	1-162-282-31	CERAMIC	100PF	10%	50V
C103	1-124-225-00	ELECT	100MF	20%	6.3V
C104	1-161-379-00	CERAMIC	0.01MF	20%	16V
C105	1-161-379-00	CERAMIC	0.01MF	20%	16V
C106	1-124-258-00	ELECT	3.3MF	20%	25V
C110	1-124-225-00	ELECT	100MF	20%	6.3V
C201	1-162-294-31	CERAMIC	0.001MF	10%	50V
C202	1-162-282-31	CERAMIC	100PF	10%	50V
C203	1-124-225-00	ELECT	100MF	20%	6.3V
C204	1-161-379-00	CERAMIC	0.01MF	20%	16V
C205	1-161-379-00	CERAMIC	0.01MF	20%	16V
C206	1-124-258-00	ELECT	3.3MF	20%	25V
C210	1-124-225-00	ELECT	100MF	20%	6.3V
C301	1-124-225-00	ELECT	100MF	20%	6.3V
C302	1-124-225-00	ELECT	100MF	20%	6.3V
C303	1-124-434-00	ELECT	220MF	20%	4V
C304	1-162-294-31	CERAMIC	0.001MF	10%	50V
C305	1-124-225-00	ELECT	100MF	20%	6.3V
C601	1-124-258-00	ELECT	3.3MF	20%	25V
C603	1-124-258-00	ELECT	3.3MF	20%	25V
CNJ1	1-563-474-11	HOUSING, CONNECTOR 6P			
CNP1	*1-506-988-11	PIN, CONNECTOR (PC BOARD) 6P			
D301	8-719-801-26	DIODE TLR223			
IC301	8-759-802-85	IC LA4570			
IC601	8-759-801-12	IC LA5523			
J401	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5)			
J402	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5)			

Ref.No.	Part No.	Description			
R101	1-249-407-11	CARBON	150	5%	1/4W
R102	1-247-883-00	CARBON	150K	5%	1/4W
R103	1-249-428-11	CARBON	8.2K	5%	1/4W
R104	1-249-430-11	CARBON	12K	5%	1/4W
R105	1-249-417-11	CARBON	1K	5%	1/4W
R201	1-249-407-11	CARBON	150	5%	1/4W
R202	1-247-883-00	CARBON	150K	5%	1/4W
R203	1-249-428-11	CARBON	8.2K	5%	1/4W
R204	1-249-430-11	CARBON	12K	5%	1/4W
R205	1-249-417-11	CARBON	1K	5%	1/4W
R304	1-215-406-00	CARBON	240	5%	1/4W
R305	1-249-421-11	CARBON	2.2K	5%	1/4W
R601	1-247-826-00	CARBON	620	5%	1/4W
R602	1-215-440-00	CARBON	6.2K	5%	1/4W
R603	1-249-420-11	CARBON	1.8K	5%	1/4W
R604	1-215-438-00	CARBON	5.1K	5%	1/4W
RV101	1-230-593-11	RES, VAR, CARBON 10K/10K (VOL)			
RV601	1-238-041-21	RES, ADJ, CARBON 5K			
S303	1-571-406-11	SWITCH, PUSH			
TH601	1-808-289-21	THERMISTOR (POSITIVE)			
TH602	1-808-292-11	THERMISTOR			

ACCESSORY & PACKING MATERIAL

*3-345-612-01	CUSHION (UPPER)
*3-345-613-01	CUSHION (LOWER)
*3-345-624-01	(A52:US).....INDIVIDUAL CARTON
*3-345-626-01	(A52:Canadian)...INDIVIDUAL CARTON
*3-345-628-01	(B52:AEP).....INDIVIDUAL CARTON
*3-345-629-01	(B52:E).....INDIVIDUAL CARTON
*3-345-632-01	(B52:UK).....INDIVIDUAL CARTON
3-701-624-00	BAG, POLYETHYLENE
3-769-807-11	(B52:UK,E).....MANUAL, INSTRUCTION
3-769-807-21	(A52).....MANUAL, INSTRUCTION
3-769-807-31	(A52:Canadian)...MANUAL, INSTRUCTION
3-769-807-41	(B52:AEP).....MANUAL, INSTRUCTION
8-952-261-90	(A52/B52:AEP,UK)...HEADPHONE MDR-W15L/Y SET
8-952-265-90	(B52:E).....HEADPHONE MDR-E215/Y SET
X-3336-630-1	CASE ASSY, CARRYING